

What is claimed is:

1. An information providing apparatus, comprising:
 - an identification information transmitter which transmits its own identification information to an information receiver when an existence confirmation request from said information receiver is received;
 - a connection request waiting unit configured to wait reception of a connection request from said information receiver after transmitting the identification information;
 - a connection processing unit configured to conduct connection processing for said information receiver when said connection request waiting unit receives the connection request from said information receiver;
 - an information providing unit configured to provide said information receiver with prescribed information after the connection processing is completed; and
 - a power controller which controls electric power for transmitting said prescribed information so that a possible range of wireless communication at the time when said information providing unit provides information is broader than the possible time until said connection processing unit completes the connection processing.
2. The information providing apparatus according to claim 1, further comprising:
 - a program storage which stores a program in which processing contents of said connection request waiting unit, said identification information transmitter, said connection processing unit and said power controller are described; and
 - a processing unit configured to execute the program,
 - wherein said processing unit gives a certain command for electric power control described in the program, to said power controller; and
 - said power controller controls the electric power for transmission based on the certain command.
3. The information providing apparatus according to claim 1, wherein said power controller has a electric power display which displays information relating to a current electric power for transmission.

4. The information providing apparatus according to claim 1, wherein said information receiver is a portable terminal.

5. The information providing apparatus according to claim 1, wherein wireless communication for said information receiver is conducted according to Bluetooth™.

6. An information receiver, comprising:

an existence confirmation unit configured to conduct an existence confirmation request with respect to an information providing apparatus;

an identification information receiver which receives a response for the existence confirmation request and acquires identification information of said information providing apparatus;

~ a connection processing unit configured to conduct a connection request with respect to said information providing apparatus by using the received identification information, and to conduct the connection processing with respect to said information providing apparatus;

an information receiver which receives a prescribed information from said information providing apparatus after the connection processing is completed; and

a power controller which controls electric power during said connection processing unit is conducting the connection request so that a possible range of wireless communication at the time when said connection processing unit completes the connection processing is narrower than the possible range at the time when said information receiver receives information.

7. The information receiver according to claim 6, further comprising:

a program storage which stores a program in which processing contents of said existence confirmation unit, said identification information receiver, said connection processing unit and said power controller are described; and

a processing unit configured to process the program,

wherein said processing unit gives a certain command for the power control described in the program, to said power controller; and

said power controller controls the electric power for transmission based on the certain command.

8. The information receiver according to claim 6, wherein said power controller has a electric power display which displays information relating to a current electric power for transmission.

9. The information receiver according to claim 6, wherein said information providing apparatus is a POS (Point Of Sales) apparatus or a portable terminal.

10. The information receiver according to claim 6, wherein wireless communication for said information providing apparatus is conducted according to Bluetooth™.

11. An information providing apparatus, comprising:

a first power controller which sets electric power for transmission so that a possible range of wireless communication becomes a first range;

a connection processing unit configured to conduct connection processing with respect to said information receiver when the possible range of wireless communication is set to said first range, and connection request from an information receiver is received; and

a second power controller which sets electric power for transmission so that the possible range of wireless communication becomes a second range broader than the first range when it is determined that the transmitted information did not reach said information receiver before the connection processing with said information receiver is completed.

12. The information providing apparatus according to claim 11, further comprising a third power controller which sets electric power for transmission so that the possible power of wireless communication becomes a third range broader than the second range after said second power controller sets the possible range of wireless communication, when there is no response for a packet transmitted to said information

receiver, and it is determined that the transmitted information has not reached said information receiver.

13. The information providing apparatus according to claim 11, wherein said information receiver is a portable terminal.

14. The information providing apparatus according to claim 11, wherein wireless communication is conducted according to Bluetooth™.

15. An information providing program which controls operation of an information providing apparatus, making a computer operate, comprising:

- giving a first command which instructs said wireless communication unit to change electric power for transmission so that a possible range of wireless communication in said information providing apparatus becomes a first range; and

- giving a second command which instructs said wireless communication unit to change electric power for transmission so that the possible range of wireless communication in said wireless communication unit becomes a second range broader than said first range, after said wireless communication unit changes the electric power for transmission according to the first command, when said wireless communication unit notifies connection completion with said information receiver.

16. An information receiving program which controls operation of an information receiving apparatus, making a computer operate, comprising:

- giving a first command which instructs said wireless communication unit to change electric power for transmission so that a possible range of wireless communication of a wireless communication unit in said information receiving apparatus becomes a first range;

- instructing said information providing apparatus to transmit an existence confirmation request after said wireless communication unit changes electric power for transmission by said first command;

- instructing said wireless communication unit to suspend transmission of the existence confirmation request when said wireless

communication unit notifies that said information providing apparatus has received the identification information of said information providing apparatus;

giving a second command which instructs said wireless communication unit to change electric power for transmission so that the possible range of wireless communication in said wireless communication unit becomes a second range broader than the first range, after said wireless communication unit has suspended search; and

instructing said wireless communication unit to conduct connection processing with said information providing apparatus, after said wireless communication unit changes electric power for transmission.

17. A wireless communication apparatus which conducts wireless communication for an information providing apparatus or an information receiving apparatus, comprising:

a first power changing unit configured to change electric power for transmission so that a possible range of wireless communication becomes a first range when a first instruction is received from a control unit;

a second power changing unit configured to change electric power for transmission so that the possible range of wireless communication becomes a second range broader than the first range when a second instruction is received from said control unit;

a connection processing unit configured to conduct connection processing for said information providing apparatus or said information receiving apparatus based on instruction from said control unit after said first power changing unit changes electric power for transmission; and

an information transferring unit configured to provide said information receiver with information or to receive information from said information providing apparatus based on instruction from said control unit, after the connection processing is completed and said second power changing unit changes electric power for transmission.

18. The wireless communication apparatus according to claim 17,

further comprising:

an existence confirmation request unit configured to conduct an existence confirmation request with respect to said information providing apparatus according to instruction from said control unit;

a notification unit configured to notify said control unit of the fact that a device identification information of said information providing apparatus is received from said information providing apparatus; and

an existence confirmation request suspending unit configured to suspend an existence confirmation request for said information providing apparatus according to instruction from said control unit which receives a notification from said notification unit.

19. The wireless communication apparatus according to claim 17,

wherein said information transferring unit begins the connection processing for said information receiving apparatus based on an instruction from said control unit after said first power changing unit changes electric power for transmission, continues the connection processing for said information providing apparatus at a second range broader than said first range when said second power changing unit changes electric power for transmission during the connection processing, and completes the connection processing.

20. The wireless communication apparatus according to claim 17, wherein the wireless communication for said information providing apparatus or said information receiving apparatus is conducted according to Bluetooth™.